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dent, and in the evening the university will give a banquet. On Thursday, June 24, the Rede lecture will be delivered, and honorary degrees will be conferred. It is further proposed to hold an exhibition of portraits, editions and relics of Darwin at Christ's College, somewhat similar to the Milton exhibition of last June.

Already some 200 delegates have been appointed to represent institutions, including:

Professor W. G. Farlow, American Academy of Arts and Sciences, Boston; Professor C. S. Minot, Boston; Professor R. H. Chittenden, Yale University, New Haven; Professor E. B. Wilson, Columbia University, New York; Dr. J. M. Baldwin, Johns Hopkins University, Baltimore; Professor J. Loeb, University of California, Berkeley; Dr. H. F. Osborn, American Philosophical Society; Dr. L. O. Howard, Academy of Sciences, Washington; Mr. C. F. Cox, Academy of Sciences, New York; Domingo Gana, Universidad de Chile, Santiago; Hofrat Dr. L. von Graff, Gratz; Professor Vejdovsky, Prague; Hofrat Dr. F. Steindachner, Vienna; Professor E. van Beneden, Brussels; Professor H. F. E. Jungherzen, Copenhagen; Professor Cuénot, Nancy; M. van Tieghem, Institute de France, Paris; Le Prince Roland Bonaparte, Institute de France, Paris; Professor E. Metchnikoff, Pasteur Institute, Paris; Ober-Regierungsrat Professor Adolf Engler, Deutsche Botanische Gesellschaft, Berlin; Dr. F. von Luschan, Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Berlin; Professor Kukenthal, Breslau; Professor Max Verworn, Göttingen; Professor Bütschli, Heidelberg; Professor R. Hertwig, Munich; Professor Goebel, Munich; Professor E. Ballowitz, Münster; Professor Graf zu Solms-Laubach, Strassburg; Professor Th. Boveri, Würzburg; Professor H. de Vries, Amsterdam; Professor J. H. van Bemmelen, Groningen; Professor A. A. W. Hubrecht, Utrecht; the Italian Ambassador, Marquis of San Giuliano, Societa Geografica Italiana, Rome; Professor C. Ishikawa, Tokio; Dr. W. C. Brögger, Christiania; Professor V. M. Simkevich and Professor V. V. Zalenskij, St. Petersburg; Professor H. Theel, Professor Chr. Aurivillius and Professor A. G. Nathorst, Stockholm; Dr. Paul Sarasin, Zurich; the Right Hon. Sir John Buchanan, University of Cape of Good Hope, Cape Town; Sir Richard Solomon, University College, Johannesburg; Professor A. Liversidge, Royal Society of New South Wales, Sydney; Sir E. T. Candy, the University, Bombay; Sir Lewis

Tupper, Panjab University, Lahore; Dr. J. C. Willis, Royal Botanic Gardens, Peradeniya; Professor E. Rutherford, Christchurch, New Zealand; Sir Oliver Lodge, Birmingham University; Sir Isambard Owen, Durham University; Dr. A. W. W. Dale, Liverpool University; Sir Archibald Geikie, the Royal Society, London; Lord Avebury, Sir T. Lauder Brunton and Sir E. Ray Lankester, the Royal Society, London; Mr. Francis Darwin, British Association for the Advancement of Science; the Duke of Northumberland, the Royal Institution, London; Sir James Crichton-Browne, the Royal Anthropological Institute, London; Lieutenant-Colonel D. Prain, Royal Botanic Gardens, Kew; Professor G. C. Bourne, Dr. F. Gotch and Professor E. B. Poulton, Oxford University; Sir Charles Eliot, Sheffield University; Mr. R. F. Scharff, Royal Zoological Society, Dublin; Professor W. C. McIntosh, St. Andrews University; Sir William Turner and Professor Cossar Ewart, Edinburgh University; Principal E. H. Griffiths, University College, Cardiff.

WOLCOTT GIBBS

THE death of Wolcott Gibbs takes a commanding figure from the ranks of the veterans of science. Attaining the age of over eighty-six years, he had been for a long time almost the sole survivor among the pioneers of American chemistry. He was one of the founders of the National Academy of Sciences in 1870; and he alone saw his name included among those of living members in 1908.

For over a decade he had headed in academic seniority the list of the faculties of Harvard University. He served there as Rumford professor for twenty-four years, and in honorable retirement bore the title of Rumford professor emeritus for twenty-one years more. The infirmity due to his increasing years had withdrawn from him the privilege of contributing to the growth of his beloved science; but his interest in the work of others remained keen and enthusiastic until the end had almost come—until pain had driven away all the joy of life.

It has been said that he was one of the pioneers of American chemistry. He was made assistant professor in New York at the age of twenty-six in 1848. His eager and energetic spirit and his thorough training

under the inspiring guidance of Rose, Ram-melsberg, Liebig, Laurent, Dumas and Regnault had given him an insight into the possible future of chemistry which forbade his contentedly settling down into the mere routine of teaching. Thus at once he joined the then pitifully small band of Americans who sought to advance the bounds of knowledge.

It is impossible here to present a detailed survey of the greatly varied fields in which his work lay, but a brief sketch will give some idea of the activity of his scientific imagination. His first important research concerned the complex ammonia-cobalt compounds, one of the most interesting series among inorganic substances. This masterly work, conducted with the collaboration of F. A. Genth, shed much light upon the puzzling nature of complex compounds in general, and laid the foundation for one of the most elaborate of modern chemical theories. The following years (1861-4) saw him engaged upon a careful study of the platinum metals, upon which he was engaged when he accepted the call to Cambridge in 1863. Shortly afterward (1864) he published for the first time a description of his use of the voltaic current for depositing copper and nickel in such a manner that the deposited metals could be directly weighed—thus providing a simple and exact quantitative method for the analysis of substances containing these metals. The fact that a German, Luckow, afterwards stated that he had used the method for copper before Gibbs had used it, does not detract from the real originality of Gibbs's idea; for Luckow's work was wholly unknown to Gibbs.

From time to time throughout all Gibbs's long period of scientific activity there appeared papers from his pen describing other new and useful methods of quantitative analysis, many of which have been incorporated into the common analytical practise of to-day. For example, his sand-filtering device of 1867 may be said to have been a forerunner of the present admirable apparatus perfected by Gooch and Munroe.

Not long after coming to Harvard, Gibbs

turned his attention to the precise use of the spectrometer in chemical investigation, and this work was continued in 1875. Throughout all this time the subject of his work with Genth was only half dormant in his mind, and occasional theoretical or experimental papers concerning the peculiar nature of cobaltamine compounds showed his devotion to his early choice.

Not content with the paradoxes and puzzles offered by these complex bases, or with the other abstruse subjects mentioned, he attacked in succeeding years the complex inorganic acids, composed of various combinations of tungstic, molybdic, phosphoric, arsenic, antimonic and vanadic acids. One can not help wishing, upon studying his patient and careful quest among the bewildering phenomena manifested by these singular substances, that he had had the assistance of modern physical chemistry. But our present knowledge was not then at any one's disposal, and Gibbs did his best with the means at his command, devoting himself for a number of years to the expansion and systematizing of the work in this but slightly cultivated field.

From inorganic chemistry he later turned for a short time to a very different subject, undertaking with H. A. Hare and E. T. Reichert, a systematic study of the action of definitely related chemical compounds upon animals. This research, which appeared in 1891 and 1892, together with occasional previous papers upon organic chemistry, afforded evidence of the breadth of his interest.

Keen as his sense of the importance of physiological chemistry became, it was not keen enough to divert him wholly from his devotion to the rarer substances of the inorganic world, as his following paper on the oxides contained in cerite, samarskite, gadolinite and fergusonite testified.

Although Wolcott Gibbs was essentially an experimentalist, he was one of the first of American chemists to appreciate the importance of thermodynamics. His large library contained all the standard works upon heat, and his influence was the prime factor in having caused the award of the Rumford

medal to J. Willard Gibbs as early as 1880, long before the world at large appreciated the fundamental character of the work of the great New Haven physicist. Wolcott Gibbs served on the Rumford Committee of the American Academy for thirty years (1864-94), and in many other ways did his best to aid the progress of science in America. He was for a time president of the National Academy of Sciences, until ill health enforced his resignation; and he served also as president of the American Association for the Advancement of Science.

Not only at home, but also abroad, his eminence was worthily recognized. His election to honorary membership in the German Chemical Society in 1883 and, to corresponding membership in the Royal Prussian Academy in 1885 is perhaps the most striking evidence of the foreign appreciation of his work. No other American chemist has ever attained to either of these high honors.

The brief autobiography published in the issue of *SCIENCE* for Friday, December 18, makes unnecessary a repetition of the chief events in his quiet daily life. His manhood was spent partly in New York, partly in Cambridge, and finally during recent years, among his cherished flowers at his home on Gibbs Avenue near the First Beach at Newport, R. I. The circumstances of his early academic life brought him into close contact with but few students. This is the more to be regretted because his enthusiastic spirit, his tireless energy, his generous recognition of everything good, and best of all his warm human friendship endeared him to all who knew him. Those who were thus fortunate, whether students or colleagues, will always devotedly treasure his memory; and his place as a pioneer of science in America will always be secure.

THEODORE WILLIAM RICHARDS

SCIENTIFIC NOTES AND NEWS

THE honorary local secretaries of the British Association for the Advancement of Science to be held in Winnipeg from August 25 to September 1, of the present year, are C. M. Bell, Esq., W. Sanford Evans, Esq., Professor

M. A. Parker. Enquiries and communications on matters connected with the meeting should be addressed: To the Local Secretaries, British Association for the Advancement of Science, University Building, Winnipeg, Man.

THE American Society of Zoologists, Eastern Branch, at its recent meeting in Baltimore, elected the following officers: *President*, Professor Herbert S. Jennings, the Johns Hopkins University; *Vice-president*, Professor H. V. Wilson, University of North Carolina; *Secretary-treasurer*, Dr. Lorande Loss Woodruff, Yale University; *Member of Executive Committee*, Professor Maynard M. Metcalf, Oberlin College.

A DIVISION of Food and Agricultural Chemistry of the American Chemical Society has organized and elected the following officers and executive committee: *Chairman*, W. D. Bigelow; *Vice-chairman*, C. A. Brown; *Secretary*, W. B. D. Penniman; *Executive Committee*, F. K. Cameron, H. H. Huston, P. Rudnick, B. E. Curry.

AT the annual meeting of the Academy of Science of St. Louis, Professor Trelease was elected president, and Professor McCourt, recording secretary, for the current year.

PRESIDENT JAMES B. ANGELL, of the University of Michigan, celebrated his eightieth birthday on January 7, while attending the meeting of the Association of American Universities, at Cornell University.

PRESIDENT ELIOT, of Harvard University, expects to leave Cambridge on February 7, for a two-months' trip through the middle west to the southwest and south, during which he will make a large number of addresses to Harvard alumni and others.

DR. ALBRECHT PENCK, professor of geography at Berlin, and this year Kaiser Wilhelm professor at Columbia University, has been given the degree of doctor of science by Columbia University.

THE Wahlburg gold medal of the Swedish Society for Anthropology and Geography will be presented to Dr. Sven Hedin on his return to Stockholm. This is the second